Please replace the paragraph at page 1, line 19, with the following rewritten paragraph:

As shown in figure 19, the conventional tracking error detection apparatus is provided with a photodetector 101 having photoreceptor elements 101a, 101b, 101c, and 101d that receive a reflected light beam from a light spot, and outputting photo currents according to the amounts of light received by the respective photoreceptor elements; first to fourth current-to-voltage converter 102a to 102d for converting the photo currents outputted from the photodetector 101 into voltage signals; signal generators, i.e., first and second adders 103a and 103b, for generating two signal sequences whose phases change depending on a tracking error of the light spot, from the voltage signals obtained by the first to fourth current-to-voltage converter 102a to 102d; first and second analog-to-digital converters (ADC) <u>104a and 104b</u> for obtaining first and second digital signal sequences from the two signal sequences; first and second interpolation filters 105a and 105b for subjecting the inputted digital signals to interpolation; first and second zero cross point detection circuits 106a and 106b for detecting zero cross points of the first and second digital signal sequences which are interpolated by the first and second interpolation filters 105a and 105b, respectively; a phase difference detection circuit 107 for detecting a phase difference between the zero cross point of the first digital signal sequence and the zero cross point of the second digital signal sequence; and a low-pass filter (LPF) 108 for subjecting a phase comparison signal outputted from the phase difference detection circuit 107 to band restriction to obtain a tracking error signal. The photodetector 101 comprises the four photodetector elements 101a, 101b, 101c, and 101d that are partitioned in a tangential direction and a perpendicular direction with respect to an information track that is recorded as an information pit line on the recording medium. Among the signals which are generated according to the amounts of light received by the respective photoreceptor elements and are outputted from the photodetector 101, the output signals from the photoreceptor elements positioned on a diagonal line are added by each of the first and second adders 103a and 103b, thereby generating two sequences of digital signals. Further, a zerocross point is a point where an inputted

digital signal intersects a center level of the digital signal that is calculated from an average value or the like of the digital signal.

Please replace the paragraph at page 47, line 21, with the following rewritten paragraph:

The phase difference detection circuit 31 comprises a phase difference calculation unit 1, a pulse generation unit 2, an invalid pulse cancel unit 4, and a data switching unit 5. ~~The~~ Since the phase difference calculation unit 1, the pulse generation unit 2, and the invalid pulse cancel unit 4 constituting the phase difference detection circuit 31 are identical to the phase difference calculation unit 1, the pulse generation unit 2, and the invalid pulse cancel unit 4 according to the first and second embodiments described with reference to figures 1 and 4, respectively, repeated description is not necessary.

Please replace the paragraph at page 50, line 25, with the following rewritten paragraph:

In the tracking error detection apparatus according to the third embodiment, when the invalid pulse is canceled by the invalid pulse cancel unit 4, the data switching unit 5 outputs the just-previous phase difference comparison result as a pulse signal corresponding to one sampling clock at the timing of the canceled invalid pulse. However, the data switching unit 5 may ~~outputs~~ output the average of plural phase difference comparison results obtained before and/or after the invalid pulse, as a pulse signal corresponding to one sampling clock at the timing of the invalid pulse.

Please replace the paragraph at page 58, line 17, with the following rewritten paragraph:

In figure 13, the tracking error detection apparatus comprises a photodetector 101 that has photoreceptor elements 101a, 101b, 101c, and 101d each receiving a reflected light beam from a

light spot, and outputs photo currents according to the amounts of light received by the respective photoreceptor elements; first to fourth current-to-voltage ~~converter~~ converters 102a to 102d for converting the photo currents outputted from the photodetector 101 into voltage signals; first to fourth analog-to-digital converters (ADCs) 104a to 104d for obtaining first to fourth digital signal sequences from the voltage signals obtained by the first to fourth current-to-voltage converters 102a to 102d; first to fourth interpolation filters 105a to 105d for subjecting the inputted digital signals to interpolation; first to fourth zerocross point detection circuits 106a to 106d for detecting zerocross points of the first to fourth digital signal sequences interpolated by the first to fourth interpolation filters 105a to 105d; first and second phase difference detection circuits 11a and 11b for performing phase comparison using a distance between the zerocross points of predetermined two sequences of digital signals among the zerocross points of the four sequences of digital signals, and outputting the phase comparison result between the zerocross points; an adder 109 for adding the output signal from the first phase difference detection circuit 11a and the output signal from the second phase difference detection circuit 11b; and a low-pass filter (LPF) 108 for subjecting the output signal from the adder 109 to band restriction to obtain a tracking error signal. In this sixth embodiment, the photodetector 101 is provided with the four photoreceptor elements 101a, 101b, 101c, and 101d that are partitioned in the tangential direction and the perpendicular direction with respect to an information track as an information pit line on the recording medium, and the direction in which the information track mapped thereon is extended is shown by an arrow in figure 13. Further, a zerocross point is a point where an inputted digital signal intersects a center level of the digital signal that is calculated from an average value or the like of the digital signal.

Please replace the paragraph at page 64, line 9, with the following rewritten paragraph:

When the tracking error signal is detected, the phase difference between the photoreceptors placed forward and backward with respect to the information track advancing direction, i.e., the phase difference of the output signals between the photoreceptors 101a and 101b and the photoreceptors 101c and 101d, does not affect ~~on~~ the tracking error signal, whereby variations in the

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offset during tracking error detection can be suppressed even when the objective lens is displaced due to tracking control and thereby the light spot is displaced on the photodetector 101.